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ABSTRACT

The first of two papers compares two models (the market based model and the prevalence model) for analyzing data from annual state surveys to determine future special education personnel needs and discusses critical issues in data collection. These data are required under the Individuals with Disabilities Education Act which asks states to project the number of special education personnel needed over a 5-year period. The market based model analyzes demand in terms of growth over prior year (if any), attrition (including retirement), temporary/emergency approvals, and vacant funded positions. It analyzes supply in terms of in state trained (minus those moving out of state), out of state trained being hired, and active pool. The prevalence model is based on prevalence by impairment area divided by the maximum number allowed per staff to determine the projected staff number needed, which is then compared with the existing staff number. This model can also be applied to the number of students per program to determine projected staff needed. Specific problems concerning the quantity, quality, and diversity of current state data are identified, in the second paper. This paper concludes that current inefficient methods of data collection, the lack of supply data, and the lack of an agreed upon personnel model prohibits the computation necessary for effective use of either a prevalence or a market based projection. (DB)

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Special Education Workforce

by Lucian Parshall, Ed.D.

New sections of the Individuals with Disabilities Education Act (Section 613) requires SEAs to determine the supply of qualified personnel preparing to enter the field of special education in instructional, related services, and leadership positions. To do this, SEAs must have support from institutions of higher education (IHE) programs that prepare direct instruction, related services and administrative personnel. These supply and demand data are reported in the SEA's state plan which must project the number of special education personnel over a five-year period.

Supply side data collection in Michigan began in November 1991, when surveys were distributed to all Michigan IHEs that prepare special education staff (see attached). Undergraduate and graduate students who had declared special education majors were asked to complete the survey if they met all of the following conditions:

1. They planned to work in the field of special education, and
2. They were not permanently employed in the special education profession at the time of the survey, and
3. They had not already completed the survey in the current school year in any other course.

The annual survey takes approximately six minutes to complete, is administered by the professor and returned to the department on December 1st (first semester) and February 1st (second semester) of each school year. This supply data is then used with demand data which is also collected on December 1st from school districts. Demand data is collected under the Individuals with Disabilities Education Act (Section 618). Results are compiled and the data are used in a formula based on either a Market Based Model or a Prevalence Model. Student data is needed for the Prevalence Model.

Market Based Model

Some of the variables that affect a market generated approach include retention, retirement, recruitment, vacant funded positions, certification standards, pre-service training, and emergency approved positions. Market demand is simply the number of vacant funded positions. The most common definition of need in this model (while not the most accurate) is whether existing positions are filled with uncertified (or emergency approved) personnel or do the positions remain vacant.

From a market based perspective, current need is the difference between the number of certified staff filling funded positions and the actual number of funded positions. Typically, positions for which certified staff cannot be found are filled with staff who do not meet state requirements. however, other variables such as attrition and staff growth must also be considered. Four demand variables (G,A,T,V) and three supply variables (OS,IS,AP) are used in this model to build a projection. The formula is as follows:

$$\text{Demand (D)} = \sum^{n} G + \sum^{n} A + \sum^{n} T + \sum^{n} V$$

G = Growth over prior year (if any)
A = Attrition (including retirement)
T = Temporary/Emergency Approved
V = Vacant funded positions

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$$\text{Supply (S)} = \sum_{n} IS + \sum_{n} OS + \sum_{n} AP$$

IS = In state trained (remove those moving out of state)
OS = Out state trained being hired
AP = Active pool which includes:
- spec ed teachers on leave planning to return
- gen ed teachers with spec ed endorsement
- recent graduates who are not yet employed

Using the market based formula, if supply is greater than demand (determined by subtracting the sum of the supply data from the sum of the demand data) then a surplus in the workforce exists. If demand data is larger than supply data then a need exists.

$$\text{If } S > D \text{ then } \sum_{n} S - \sum_{n} D = \text{Surplus}$$

$$\text{If } D > S \text{ then } \sum_{n} D - \sum_{n} S = \text{Need}$$

A problematic concern with this model is the difficulty in establishing figures for the active pool. Over time, not all graduates from IHEs are able to secure employment in special education, not all special education personnel on leave return to the profession and, not many general education teachers (with special education endorsements) wish to return to special education. An interval value must determine when individuals are removed from the active pool and placed in a reserve pool. Caution is needed. When the size of the active pool cannot be determined, the formula may produce extremely inaccurate projections of the supply or demand.

Prevalence Model

Workforce supply or demand from a prevalence based perspective is the difference between the number of certified teachers who are employed based upon identification rates of the handicapped school population. From a prevalence based perspective, personnel supply or demand is determined independently of the number of funded positions. The issues of current uncertified staff or vacancies are also not relevant. Using this perspective, a need or surplus of teachers can be determined by comparing the student head count to the number of students per teacher required in state rules/regulations. The formula used for this model is based on prevalence *by impairment area:*

$$\frac{\text{actual \# of students by impairment area}}{\text{maximum \# allowed by rule per staff}} = \text{projected staff}$$

When projected staff is larger than existing staff (by endorsement area) then a surplus exists. When projected staff is smaller than existing staff then a need exists.

Projected staff – Existing staff by endorsement area = need or surplus staff

Even though a state's delivery system may be rooted in discrete classifications, frequently students are not placed in categorical programs based on their label but may be placed in programs based upon their need. For this reason a second approach should be used which includes the number of students receiving special education in their primary educational placement (rather than by their

impairment area). This may then be compared to the number of staff assigned to that program **by FTE**. The formula used for this model *by program* is often more sensitive to workforce demand or supply.

$$\frac{\text{actual \# of students for program}}{\text{maximum \# allowed in program}} = \text{projected staff}$$

Projected staff – Existing staff by FTE in endorsement area = need or surplus staff

On the useful side, the formula is more responsive to forecasting; using a simple spreadsheet one can "what if" personnel need and surplus very easily. This model only projects broad state supply or demand and may not be sensitive to particular rural or urban districts. However, a more problematic concern with this model is the high number of variables that impact an accurate projection. These variables include: deviations or waivers to the number of students in programs, the use of consultant or collaborative teaching approaches which lower student/teacher ratios, special education reform movements such as inclusive education, and programmatic trends such as generic labels for students as well as funding issues.

Summary

The special education community must be able to collect accurate demand data (§618) and reliable supply data (§613) to build projections of its workforce for the next century. A recent study conducted by WESTAT of the State Personnel Data Collection Systems (O'Reilly, 1992) had several distressing findings. For example, it found that the current data used by SEAs are not reliable enough to report demand/supply data which meets federal reporting requirements and is of little value to state policy makers. Furthermore, only half the states indicated their ability to compute personnel needs; and that only seven states have actually used some type of formula to project workforce needs in their state. This is not a good position for OSEP when several other institutions and agencies use this information to create policy relating to alleged shortages in special education personnel. If national efforts are being mobilized based on our state data, we had better be able to defend our data when massive shortages don't materialize.

Reliable personnel data must have characteristics that fall into three categories: quantity, quality, and diversity. If data in these three categories can be collected from the demand side (§618) then similar categories will also be needed from the supply side (§613) for workforce projections. If they can't, accurate projections will not be possible.

Projecting the Special Education Demand/Supply Data Management Problems

The special education community must be able to collect accurate demand data (§618) and reliable supply data (§613) to build projections of its workforce for the next century. A recent study conducted by WESTAT of the State Personnel Data Collection Systems (O'Reilly, 1992) had several distressing findings. For example, it found that the current data used by SEAs are not reliable enough to report demand/supply data which meets federal reporting requirements and is of little value to state policy makers. Furthermore, only half the states indicated their ability to compute personnel needs; and that only seven states have actually used some type of formula to project workforce needs in their state. This is not a good position for OSEP when several other agencies use this information to create policy relating to our alleged shortages in special education. If national efforts are being mobilized based on our state data we had better be able to defend our data when massive shortages don't materialize. Reliable personnel data must have characteristics that fall into three categories: quantity, quality, and diversity. If data in these three categories can be collected from the demand side (§618) then similar categories will also be needed from the supply side (§613) for wrokforce projections.

Quantity

The first problem relates to **numbers**. When 71% of the states rely on a general education data base for personnel information, special education does not have much control over accuracy of the **numbers** it submits to OSEP. General education data bases present other problems besides their reliability. They usually lack: staff assigned to age groups 0-5 or 18-21, links with student information, or special staff with licenses or unique endorsements not normally placed on a teaching certificate. While 96% of the SEAs report that they can provide the number of fully certified staff, only:

- 59% of the SEAs can report the number of vacant teacher positions,
- 14% can report the number of teachers being retained, and
- 82% can report the number of related services staff.

One particular problem this presents with demand data is the inability to identify vacant funded positions. These data are needed in demand formulas.

Quality

Data that relates to the quality of personnel refers to the number of staff who lack full credentials. This often includes staff on: temporary or emergency approvals, waivers, or staff who lack an endorsement in special education. WESTAT found that only:

- 92% of the SEAs can provide data on staff who are not fully certified,
- 69% of the SEAs can provide data on not fully qualified related service staff, and
- 39% of the SEAs have data on contracted positions.

This further reduces the validity of demand data. particularly when some projection formulas (OSEPs) use figures relating to the lack of fully qualified personnel as a key indicator of demand.

Diversity

Diverse data refers to broad characteristics held by staff, such as: ethnic group, gender, age, as well as assignment or endorsement categories. WESTAT found that, only:

- 66% of the SEAs could provide demand data by assignment category,
- 50% of the SEAs could provide demand data by certification categories, and
- 39% of the SEAs have the related services data necessary to project workforce demands.

The particular problem this presents is that diverse staff characteristics are the most frequently requested demand data. Institutions of higher education that prepare personnel and school districts that need to fill specific vacant instructional areas constantly request diverse data from SEAs for

grants and recruitment. Without knowing the diverse characteristics of special education staff, any projection model will have little value and will be seen as little more than a data collection burden. **The WESTAT report only addressed demand data. We are in need of a similar survey for supply data**.

One final problem relating to demand data is its collection: only 50% of the SEAs have computerized data bases, the other half rely on a paper and pencil process. In addition, only:

- 15% of the SEAs have multiple personnel data bases maintained by different agencies within the state department,
- 27% are able to link personnel with students, and
- 43% have a longitudinal data base on personnel.

This lack of computer power as well as the lack of single data sets in state agencies that are under the control of special education compounds the usefulness of the data in making workforce projections in three ways: by the inability to link personnel data to students so prevalence models cannot be used for projections, by allowing snapshot data bases which do not allow for the calculation of attrition rates (necessary to identify surplus personnel), and by increasing error in the quantity, quality and diversity of the data being reported.

Summary

Will the special education community be able to answer the questions:

Is recruitment necessary?
In what categories?
In what parts of the country?
What supply is in the pipeline?
In what categories?
In what parts of the country?

The complexity and richness of the data that is needed to make state and regional projections cannot be collected using current methods proposed by legislation. Furthermore, there is no common agreement as to what would be useful information. While 85% of the states indicated they would like workforce data by teacher certification category, 84% also would like it by assignment, 62% by student disability, and 57% by endorsement area.

It appears that special education is years away from an accurate projection of its demand or supply. The inefficient paper and pencil methods used to collect data, the apparent lack of supply data, as well as the lack of an agreed upon personnel model that uses both demand and supply information in a way that is useful to states on a regional basis, prohibits the computation necessary for either a prevalence or a market based projection.

- Lucian Parshall